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THE BALANCE OF PAYMENTS AND NATIONAL SHIPPING: CONCEPTUAL FRAMEWORK

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Canada

The Balance of Payments and National Shipping:

Conceptual Framework

by

Bruno Jacques

CANADIAN TRANSPORT COMMISSION
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FOREWORD

It is often argued that investment in national shipping will improve a country's balance of payments position. Governments and private interests have consistently shown interest in such a thesis, and many countries have even put it into practice. In real terms, however, its impact may sometimes have been overestimated.

This report is divided into two parts: Part I explores the concept and workings of the balance of payments in relation to shipping, as well as gives an account of the main theoretical and economic concepts at issue in order to assess a national fleet's impact on the balance of payments. Part II of this study attempts to measure quantitatively the extent of the impact. It is important to distinguish the balance of payments from other concepts used to estimate profitability in a primarily micro-economic sense.

The purpose of this work is to provide certain elements of considerations and reflections important for public debate on Canadian ocean-shipping. The opinions expressed in this report are, of course, those of the author and do not necessarily reflect the views of the Canadian Transport Commission.

R. Lake
Executive Director
Research Branch

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Chapter 1

INTRODUCTION

"A national merchant marine improves its country's balance of payments." So goes the argument in favour of investment in a national merchant fleet. The purpose of this study is to pull together essential data and elements to verify the claim.

1.1 An Exploratory Study

This study is intended to bring to light a number of thoughts and approaches corroborated by many researchers from various countries. The first part of the work, then, is a description of the various theoretical approaches for measuring the contribution of a national fleet to the balance of payments. This synthesis, which is the core of the report, also includes a description of the key balance of payments concepts, which may be quite different from concepts used to study economic and financial profitability. Methods of estimating empirically the contribution of national shipping to the balance of payments are summarized at the end of the report.

1.2 Limitations of the Study

Improving the balance of payments is by no means the only argument given in support of a national fleet. Security of supply, military strategy, safeguarding and creating jobs in the shipping industry (e.g. shipbuilding) and national pride are among the others. Although this report focusses mainly on the balance of payments issue, this does not mean that the others are of no interest.

1.3 Theoretical Background

The theoretical approach used here has been used in a number of studies. It is based primarily on the method described by Professor Richard Goss* of the Department of Maritime Studies of the Institute of Science and Technology, University of Wales, Cardiff.

In his study, Goss states that the method developed therein is applicable not only to decisions to create new fleets, but also to decisions concerning the expansion or contraction of existing fleets. It involves a comparative study of the use of national-flag fleets versus foreign-flag fleets.

The effects of a fleet on the balance of payments are classified under four headings.

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* Richard O. Goss, "Investment in Shipping and the Balance of Payments: A Case-Study of Import-Substitution Policy", in Studies in Maritime Economics, 1968, pp. 46-60.

(i) Freight: Freight, or a national fleet's revenues, is considered either as a saving of foreign exchange (in the case of carriage of imports), or as new foreign exchange earnings (in the case of carriage of exports and of participation in cross-trading). Goss emphasizes that although national shipping may increase the inflow of currency, it costs the country that practices it in other ways. Goss further notes that while freight is paid by the importer, the terms of shipment -- C.I.F. or F.O.B. -- do not affect the fleet's impact on the balance of payments in so far as the type of contract does not itself influence the choice of a ship's nationality.

The three other headings deal with exchange debits or currency outflow due to national shipping.

(ii) Spending abroad: Expenses outside the country constitute an exchange debit due to national shipping. The author further demonstrates that it would be very difficult to eliminate them even though doing so would improve a national fleet's contribution.

(iii) Spending at home: These expenditures will always occur, either by residents or by non-residents. A

national fleet, therefore, leads to a loss in currency inflow.

(iv) Capital: Capital expenditure is classified under a different heading because, in Goss' opinion, it constitutes one of shipping's major expenditures. For an accurate assessment of the long-term effects of an investment in shipping, Goss states that shipping must be compared to a country's non-shipping activities, using the net present value of each sector's production. Using this analytical framework, he shows that shipping is relatively unproductive.

The theoretical soundness of Goss' approach has been corroborated by other researchers.* In the present study, further considerations and concepts introduced by subsequent studies have been added. For instance, the concept of shadow pricing of foreign exchange was developed in a study by the Department of Finance Canada, while participation constraint was inspired by recent developments in government intervention in shipping, notably through the coming into force of the UNCTAD Code of Conduct.

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* Including studies by Harbridge House Inc. (1968), Hedlin Menzies & Associates (1970), UNCTAD (1968), Blumenhagen (1981), Alcan Shipping Services (1977), and the Department of Finance Canada (1978). Full references are given in the Select Bibliography at the end of this report.

Chapter 2

MAJOR CONCLUSIONS AND OBSERVATIONS

The aim of this study is to review the various concepts required to analyze and assess the contribution of a national merchant fleet to the balance of payments. The analytical approach used here is both microeconomic and macroeconomic. The following represents the principal conclusions and observations derived from the study.

2.1 Shipping and the Balance of Payments

Like any other microeconomic activities producing goods and services which can be traded internationally, shipping can affect the country's balance of payments position, because it gives rise to currency exchanges between residents of different countries. However, methods for stabilizing the balance of payments belong to the realm of macroeconomies, particularly where a floating exchange rate system prevails. The overall stabilization of the balance of payments by way of adjusting each balance of payments account in isolation is not, therefore, a paramount objective. Nevertheless, an equilibrium in specific accounts of the balance of payments can increase the autonomy of domestic economic policies. An empirical study on the contribution of national shipping to the balance of payments is therefore of some interest.

The impact of a shadow price on foreign currency revenues earned by international exchange of goods and services, including shipping appears to be less important for Canada than it is for a number of developing countries. In Canada, the shadow price would unlikely be more than 7%.

2.2 Statistical Data on the Balance of Payments in Canada

One of the various current account items compiled by Statistics Canada's Balance of Payments Division is "shipping", which registers part of the monetary flow between residents and non-residents arising from international shipping, including freight payments and operating expenses in foreign ports. The shipping account, however, does not take into consideration many other types of transactions occurring in relation to off-shore shipping activities, such as ship purchase and sale, interest payments, purchase of insurance policy, procurement of other associated goods and services which take place between Canadians. Since it is impossible to assess the overall impact of Canadian shipping on the balance of payments with the balance of payments data at hand, a different approach has to be developed.

2.3 Measuring the Contribution

The contribution of a national fleet of Canada's balance of payments can be measured in two stages. First, at the base, the contribution corresponds to the value added (earnings before taxes and subsidies) arising from a national fleet. Second, this basic contribution can be increased by

repatriating various production factors for off-shore shipping services, i.e. by substituting national inputs for foreign inputs.

The profitability of shipping will be generally so low that its basic contribution to the balance of payments will be insignificant. As to marginal contribution, three major concepts must be examined before it is possible to assess the extent of its contribution due to the repatriation of production factors. They are the technical feasibility of repatriation; the availability of national inputs, and finally, where there are national resource scarcities, the productivity of shipping compared to that of non-shipping industries using the same factors to be repatriated. If repatriation is feasible but the national input costlier, the following should be observed: maintaining national shipping above the break-even point in a free market environment. A priori, it would appear that repatriating inputs of production would barely increase the contribution. Although these observations are theoretically sound, further quantitative study is required to verify them.

2.4 Increasing National Participation in Shipping

Although this study has not addressed specifically the matter of developing a national merchant marine in a Canadian context, the present structure of the shipping industry could well impose certain restrictions against such a venture. In fact, various types of government intervention in shipping, flags of convenience, severe competition, open-tonnage, the enormous capital investment required and the lack of know-how are only some

of the constraints Canada could encounter when it considers increasing national participation in international shipping.

Chapter 3

DEFINITIONS

3.1 Balance of Payments

The balance of payments is the statistical tabulation of international monetary flows generated by transactions between a country's residents and the rest of the world (non-residents) within a specified period (in Canada, during a calendar year). The balance of payments is subdivided into two parts: the current account and the capital account, both of which affect official reserves.

3.2 Current Account

The current account is also subdivided into two parts. Visible trade covers all international exchanges of goods: its balance is often referred to as "a trade balance". Invisible trade records monetary flows resulting from transfers of funds, payments of interest, profits and dividends, as well as payments for services, including the "shipping" account.

3.3 Capital Account

The capital account records all flows of money for capital, direct investment, other long-term securities and bonds and short-term financial transactions.

3.4 Official Reserves and Monetary Policies

Official reserves consist of foreign currencies and securities negotiable on international money markets and controlled by national monetary authorities. Fluctuations of official reserves compensate for imbalances in the two foregoing accounts. The purpose of official reserve operations is to maintain equilibrium in the balance of payments. There is a wide range of exchange rate systems; at one end is the fixed rate and at the other, the entirely floating exchange rate. Most countries, however, have opted for a middle course: the "managed" float.

Under a managed float system, exchange rate fluctuations are dictated by foreign currency reserves and the role of the monetary authorities is to prevent great fluctuations in the exchange rate. Reserve operations smooth out short-term fluctuations. From the traditional (Keynesian) point of view, long-term fluctuations are supposed to be self-regulating, through the natural adjustment of the current and capital accounts in response to exchange fluctuations. However, monetarists have a different point of view on long-term adjustments. They argue that long-term adjustments are wholly dependent on currency supply and demand, i.e. an excess supply leads to a devaluation, while a shortage brings about a

revaluation. One thing is certain, however, whatever the school of thought, and that is that the best way to control the balance of payments and/or the rate of exchange is at the macroeconomic level -- interest rates based on the money supply, inflation controls, etc. -- rather than attempts to adjust specific accounts like "shipping". On the other hand, a balanced current account offers greater latitude in domestic economic policy. Countries using a fixed exchange rate, or some similar system, sometimes achieve equilibrium in the balance of payments by adjusting specific accounts.

3.5 Accounts Affected by Shipping

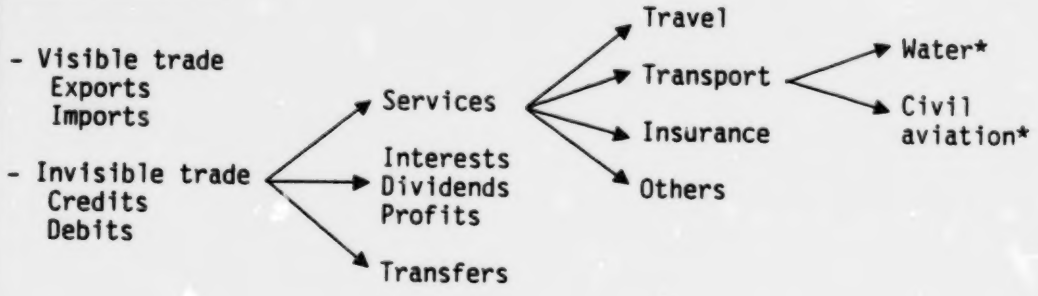
Figure 1 and Table 1 show the "shipping" account as a component of the balance of payments. This does not, however, isolate the net effect of a country's shipping very well. For instance, a country's nationals may collect profits generated by their financial involvement in shipping through foreign shipping companies without any effects showing in the shipping account of that country. The shipping account does not, therefore, cover all the effects of national participation in shipping.

3.6 Sources and Methods of Collecting Data in Canada

Statistics Canada's Balance of Payments Division is entrusted with gathering all data on Canada's international balance of payments. Although

Figure 1

THE ROLE OF SHIPPING IN THE BALANCE OF PAYMENTS



Capital account

Capital, excluding reserves
Direct investment
Other long-term assets/liabilities
Short-term transactions

Reserves

Total change in holdings
Monetization/demonetization
Valuation changes

Errors and Omissions

* Other means of transport could generate international payments. In Canada, they are entered in the "other services" account.

Source: D. Blumenhagen, "Shipping and the Balance of Payments", Lectures and Contributions, No. 32, Bremen, Institute of Shipping Economics, 1981, p. 6.

Table 1

SELECTED ITEMS OF CANADA'S BALANCE OF INTERNATIONAL PAYMENTS
(in millions of current Cdn. dollars)

Current Account	1980	1981	1982	1983	1984
EXPORTS	93 706	103 754	104 910	110 905	134 980
Goods	76 681	84 468	84 540	90 825	112 511
Services	14 351	16 226	17 202	17 342	19 357
Travel	3 349	3 760	3 724	3 841	4 338
Interest and dividends	1 577	1 829	1 698	2 017	1 805
Transport of goods	3 960	4 293	3 922	3 962	4 578
Shipping	1 480	1 519	1 310	1 244	1 283
Air freight	77	82	86	82	89
Other services	5 464	6 345	7 858	7 522	8 636
Transfers	2 675	3 059	3 169	2 737	3 113
IMPORTS	94 821	109 819	102 245	109 219	133 025
Goods	67 903	77 140	66 726	73 120	91 679
Services	24 449	30 022	32 544	33 100	37 928
Travel	4 577	4 876	5 008	6 045	6 557
Interest and dividends	7 134	8 533	10 824	10 971	13 072
Transport of goods	3 447	3 853	3 337	3 423	4 047
Shipping	1 412	1 526	1 210	1 165	1 353
Air freight	81	81	85	79	98
Other services	9 291	12 760	13 375	12 661	14 252
Transfers	2 470	2 656	2 975	2 999	3 417
CURRENT ACCOUNT BALANCE	-1 114	-6 065	2 665	1 686	1 955
Goods	8 778	7 328	17 813	17 705	20 831
Services	-10 098	-13 796	-15 342	-15 758	-18 571
Travel	-1 228	-1 116	-1 284	-2 204	-2 219
Interest and dividends	-5 557	-6 704	-9 126	-8 954	-11 267
Transport of goods	513	440	585	539	531
Shipping	68	-7	100	79	-70
Air freight	-4	1	1	3	-9
Other services	-3 827	-6 415	-5 517	-5 139	-5 616
Transfers	205	403	194	-262	-304
Capital Account					
Balance of capital movement in long-term forms	1 112	1 539	8 084	2 310	3 352
Balance of capital movement in short-term forms	-171	16 379	-1 558	4 428	2 131
Errors and omissions	-1 323	-9 253	-1 802	-5 566	-5 175
SDRs	217	210	0	0	0
NET OFFICIAL MONETARY MOVEMENTS	-1 280	1 425	-695	548	-1 089

Source: Statistics Canada, Quarterly Estimates of the Canadian Balance of International Payments, Fourth Quarter, 1980, 1981 and 1982.

there has been some effort to standardize data definitions, they still vary somewhat from country to country.*

The mandate of the data gathering organizations is also generally limited to recording transactions between residents and non-residents, in order to reconstitute monetary flows over a specified period by type of transactions. Such information, however, does not lend itself to a comparative analysis of hypothetical situations in which a national fleet is assumed to operate in different markets. For instance, when a Canadian ship carries Canadian imports, the resulting monetary transaction takes place between Canadian residents. The purchase of such services is not, therefore, entered in the balance of payments. Yet, by flying a Canadian flag, the carrier helps Canada to save foreign currency, which should be accounted for in the computation of the contribution of shipping to the balance of payments. One cannot, therefore, rely on balance of payments data to draw conclusions on the overall contribution of a future national merchant marine.

It is also possible, by examining the various methods of collecting data in Canada, to determine which accounts are, according to Statistics Canada, affected by shipping. These methods do not classify under 'shipping' all monetary flows generated by Canada's overall participation in shipping. All freight revenues received from outside Canada by Canadian operators are counted, regardless whether shipments are under C.I.F. or F.O.B. contracts. The same applies to freight paid by Canadians to non-Canadians. As far as

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* D. Blumenhagen, "Shipping and the Balance of Payments", Lectures and Contributions, No. 32, Institute of Shipping Economics of Bremen, 1981, p. II.

spending abroad by Canadian operators is concerned, all such expenditures should be in principle, entered under shipping. However, a special assumption is made for crew expenses: that crew wages are entirely spent in the country where they were paid. This can create a bias, especially when Canadian crews are employed on vessels whose voyages do not involve calls in Canada. A similar bias arises when foreign crews work on ships whose routes include Canada but not their home country. If a foreign crew sends home, from a Canadian port, some of his wages paid in Canada, it is misleading to consider such flow as a contribution made by shipping to Canada's balance of payments. Moreover, the foreign content of goods and services sold in domestic ports to foreign operators is not entered under "transport".

Generally speaking, however, particularly in view of the difficulty of gathering such data, it would appear that the statistics at hand in Canada measure correctly the status of money flows between foreign operators and Canadian residents, as well as between Canadian operators and non-residents. In fact, the various survey questionnaires in use in Canada show that all of a ship's operating expenses are included in the survey. Statistics Canada also suggests that the small number of agents surveyed makes it possible to maintain close contact with respondents and to insure fully satisfactory response rates and data reliability. Table 2 lists the types of surveys carried out in the area of shipping and provides a brief description of their contents and the number of persons interviewed in 1974.* A copy of these questionnaires is appended to this study. Statistics Canada's publication,

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* These figures remain relatively stable for surveys carried out each subsequent year.

Table 2

QUESTIONNAIRES USED BY STATISTICS CANADA TO COLLECT DATA ON THE "SHIPPING" ACCOUNT OF THE BALANCE OF PAYMENTS

Questionnaire No.	Contents	Parties Interviewed	Approximate Number of Persons Interviewed in 1974**
BP-20	Great Lakes and St. Lawrence Seaway shipping transactions	Operators (residents)*	15
BP-24	Report of cargo earnings and expenses of ocean vessels operated by non-resident interests	Canadian shipping agents representing non-resident shipowners*	70
BP-25	Report of cargo earnings and expenses of ocean vessels operated by Canadian companies	Shipping companies operated by residents	35
BP-26	Report of import of crude oil and products and other shipping operations	"Canadian import" oil companies	15

* According to Statistics Canada, non-resident agents are covered by a separate survey.

** These figures still represent the scope of today's surveys.

Source: Statistics Canada, The Canadian Balance of International Payments and International Investment Position: A Description of Sources and Methods, Catalogue 67-506E, Occasional, Ottawa, 1981.

The Canadian Balance of International Payments and International Investment Position: A Description of Sources and Methods, provides further details on the subject.

Among the data on Canada's balance of payments, the other items affected by shipping include "insurance", "payment of dividends", as well as some capital account items. Such payments are not captured under "shipping", however, and it is impossible to completely isolate, within these various items, payments due to shipping.*

3.7 Official Ownership of a Ship

A ship's official ownership is more often than not in the name of a firm, but the firm is not the ultimate owner because it is itself owned by stockholders.

3.8 Real Ownership of a Ship

The genuine owners of a ship are the economic agents who definitively own it. A ship belonging to a company is really owned by the stockholders of the company or, in the case of a wholly-owned subsidiary, by the stockholders of the parent company.

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* According to Statistics Canada's Balance of Payments Division.

3.9 Canadian Registry

Canada's ship registration requirements are given in the Maritime Code Act, Section BII-19:

"The following classes of persons are qualified to own Canadian registered ships, namely,

(a) Canadian citizens domiciled in a province; and

(b) corporations incorporated by or pursuant to an Act of Parliament or of the legislature of a province,

(i) the principal places of business of which are in Canada,

(ii) at least two-thirds of the directors of which are Canadian citizens resident in Canada, and

(iii) at least two-thirds of the persons who, pursuant to the by-laws or resolutions of the boards of directors or other governing bodies of the corporations, perform functions normally performed by the president, chairman of the board of directors or other governing body, secretary and treasurer of a

corporation are Canadian citizens ordinarily resident in Canada."*

3.10 National Merchant Marine

In this study, a merchant marine is considered national when it consists of ships registered in the country of residence of its real owners. Consequently, this definition excludes Canadian ownership of ships registered in other countries because it is impossible, even theoretically, to establish the net effect on Canada's balance of payments in such instances. The theoretical rationale for using this definition in this study is given in Chapter 5.

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* The Maritime Code Act, R.S.C. 1978, Chap. 41, Section BII-19, as referred to in a Canadian Transport Commission publication, "Les accords maritimes bilatéraux: Étude de certains éléments pertinents lors de négociations inter-ministérielles en vue d'un accord possible entre le Canada et le Brésil", Water Transport Committee, Ottawa, January 1982.

Chapter 4

THEORETICAL CONSIDERATIONS IN THE MEASUREMENT OF CONTRIBUTION

The purpose of this chapter is to set a framework for analyzing the total contribution of a country's shipping industry to its balance of payments. As noted in Chapter 3, the "shipping" account in Canada does not reflect the total contribution of maritime transport to the balance of payments. Another approach is therefore required to arrive at a fully satisfactory result.

Generally speaking, the basic unit for measuring the contribution of any industry to the balance of payments is the national currency, which is converted from foreign currencies using the exchange rate. This still holds true for shipping as well. However, in some countries the official rate of exchange does not reflect the real value ratio between two currencies. For a more accurate conversion, some economists argue that a shadow price must be added to the exchange rate. The theoretical basis for this concept is reviewed briefly at the end of this chapter.

4.1 The Ship Substitution Hypothesis

The ship substitution hypothesis allows the overall contribution to be measured by assuming that a national-flag ship can be substituted for a foreign-flag ship, and vice-versa. It is a restrictive hypothesis because it excludes those instances in which a country increases its participation in shipping simply by adding vessels to the existing world fleet. There are two reasons for this exclusion. The first is that it makes it easier to estimate the contribution by eliminating the need to assess decreases in freight rates or revenues, as well as any increases in operating expenses which generally result from an increase in supply. The second is that a supply increase in markets where there is already a surplus of shipping can only reduce profitability of the shipping industry -- a most disheartening consequence for any investor wishing to maximize the return on his investment. The hypothesis is, therefore, based on the rational behaviour of Canadian lines.

4.2 Value Added as a Basic Measure

A review of the works of various authors on measurement problems shows that value added of the shipping industry is undoubtedly the best basic measure. Value added measures the direct contribution to the balance of payments of the country of the shipowner resulting from a transfer of ship ownership and registry. This change is referred to here as "substitution", and it is an accurate and complete measurement provided that:

(1) it does not affect the volumes shipped;

(2) it does not affect the prevailing freight rate;

(3) it does not affect the nature or price of the inputs used; and

(4) it does not affect the national origin of the inputs.

To compute the total contribution of a substitution, an analysis of the various phenomena that can entail disturbances after a substitution is given in the following sections and in Chapter 5.

The assumption that the price of an input truly reflects its value leads to the computation of value added. The term "national carriers" means the owners of a ship who are residents of the country where it is registered. All that is required to calculate the value added is the aggregation of the following four flows:

(1) Revenues of national carriers earned from non-residents. This represents gross earnings of foreign exchange, e.g. revenues from carriage of national exports and from cross-trading.

(2) Revenues of national carriers earned from residents. This represents gross savings of foreign exchange, e.g. revenues from carriage of national imports.

(3) Expenses of national carriers made in foreign countries. This represents gross losses of foreign exchange, e.g. port charges paid abroad.

(4) Expenses of national carriers made in home country. This represents loss of gains in foreign exchange, e.g. port charges paid in home country by national carriers.

The value added represents the gains (or losses) brought by an existing national-flag fleet to its country's balance of payments. To compute the earnings of a potential national merchant marine, it is assumed that the existing carriers, are Canadians. This base measure is therefore linked directly to the gross financial profitability (before tax) of a ship or fleet.

4.3 Terms of Shipment

This study does not take into account whether shipments are made on the basis of F.O.B. or C.I.F., because this has no effect on the balance of payments. In fact, for any import to a given country, whether the import price includes shipping or not, the importer pays the freight costs. If the shipment is the F.O.B. basis, payment is made directly to the carrier; payment is made indirectly to the carrier through the exporter if the shipment is on a C.I.F. basis. In both cases, the effect on the balance of payments is determined by the carrier's nationality.

If the carrier is a resident of the importing country, freight paid does not affect the balance of payments because the transaction takes place between residents in that country. On the other hand, with a foreign carrier, the cost of shipping imports (freight) results in an outflow of

currency for the importing country because net payment is made by a resident to a non-resident (carrier).

Since the terms of shipment do not affect the carrier's nationality, then they also have no effect on the balance of payments. Yet C.I.F. contracts can be seen as a preferred tool for encouragement of national shipping in an exporting country, as F.O.B. contracts can be in an importing country. Some observers of the international shipping scene* point out that a shipper's nationality (the shipper is responsible for transport in a C.I.F. contract) can influence that of the carrier. This analysis, however, does not take this factor into account.

4.4 Present Value

The use of present value is recommended when analyzing the impact of a long-term investment. In fact, a contribution of foreign exchange is much more valuable if made now than in a few years. This is warranted by the "better now" theory which can be translated in concrete terms by nominal interest rates, which are generally higher than the anticipated rate of inflation.

This factor must be taken into account when evaluating any future foreign exchange contributions due to fleet development. A long-term

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* See, for example, Canadian Transport Commission's publication, Terms of Shipment in Canadian Overseas Trade: An Information Paper, Research Branch, Ottawa (working paper No. WP 20-80-01), 1980, p. 42.

analysis is therefore required, because of the importance of the fluctuations of the economic variables affecting the shipping industry.

There are many imponderables involved in measuring the present value of a long-term investment such as the purchase of a ship in real terms. Operating revenues are subject to change since volumes shipped and the freight rates are themselves subject to unpredictable changes. Even though some markets are more stable than others, future revenues must be estimated with great caution. Operating expenses can also vary significantly. When the price of oil -- a major input in shipping -- skyrocketed, no one could predict the magnitude of the increase accurately. Such uncertainties make accurate forecasting difficult.

4.5 Shadow Price of Foreign Exchange

Any economic activity which, like shipping, produces internationally tradable commodities and services can be measured in relation to the balance of payments. Doing so requires the use of a single unit of measurement. Since various national currencies do not have the same value, exchange rates are needed to convert them into comparable units. Some research shows, however, that exchange rates do not always reflect the real value of foreign currencies; for a more accurate conversion, a shadow price must therefore be added to foreign currencies. This section briefly examines the relevance of shadow pricing.

It is argued that a shadow price must be added to the rate of exchange in some countries, especially those developing countries with a more

or less fixed rate of exchange. In such a more or less closed (unofficial) exchange market, the price of foreign currency tends to be generally higher than in the official market.* The need for a shadow price is clear under such circumstances.

Some researchers** have found evidence to show that when the Canadian government buys additional foreign currencies to purchase foreign goods, it incurs a social cost that is not reflected in the prevailing rate of exchange. This social cost is a result of institutional distortions that hinder international trade, as well as domestic market distortions caused by government taxes. Estimates of social cost are based on theories developed by a branch of economic research known as "public finance", according to which social costs require shadow pricing for any activity which, like shipping, reduces the need for purchase of foreign currencies abroad. In their study, Jenkins and Kuo*** estimated this shadow price at between 7 and 8% above the market price.

However, not all economists agree with the concept of the shadow price. Some have denied the cogency of the Jenkins and Kuo argument, which is based on the idea that a tax or a subsidy causes the price of goods to deviate from their social value; they make the counter claim that government intervention

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* UNCTAD, Creating or Developing the Merchant Marines in Developing Countries, UN, UNCTAD, 1969, TD/26/Rev. 1, p. 30. At one time, for example, foreign currencies traded on Pakistan's unofficial market at 50% higher than their official value.

** See P. Glenn Jenkins, Chun-Yan Kuo, On Measuring the Social Opportunity Cost of Foreign Exchange, Ottawa, Finance Canada, June 1983, p. 26.

*** Ibid., Table 3.

in this sector allows commodity prices to reflect their full social value by adding to production costs the cost of externalities related to these commodities. Despite this, the Jenkins and Kuo method is generally accepted and is worth examining. In fact, their computations help estimate the "real" value of foreign currencies whatever their origin.

Through their macroeconometric model, Jenkins and Kuo estimate the extent of shadow pricing by examining the effect a fictitious increase in the government's direct purchase of imports would have on its capital inflow. This approach helps them evaluate the shadow price of any type of foreign exchange. Government purchase of imports is financed either by an increase in income tax or by domestic borrowing. For 1982, the estimated loss in government tax revenue would have been 7.85% in the case of income tax financing and 7.88% in the case of government borrowing. This loss in tax revenues would correspond to the shadow price for foreign exchange.

According to Jenkins and Kuo, the differential (shadow price) drops as import tariffs decline. This way, the foreign exchange differential would be reduced in 1987 to 7.49 and 7.48%, respectively. In 1987, the GATT agreements (General Agreement on Tariffs and Trade) are to come into full effect, reducing tariffs by 40%.

The effect is transmitted through the following:

(1) The purchase of imports and a drop in private demand for domestic goods lead to a depreciation of the national currency.

(2) Depreciation pushes up the price of internationally traded goods.

(3) The economy is adjusted by moving factors of production towards the production of tradable goods.

(4) These adjustments in the types of goods consumed will entail the variations in government fiscal revenues, thus creating social cost.

The model was designed to analyse a theoretical $2 billion increase in government purchasing. This amount would be large enough to finance the cost of purchasing a fleet, estimated in a report by Alcan Shipping Services Ltd.* at $1.87 billion.

Jenkins and Kuo take no account, in their macroeconometric model, of the foreign financial sector, the point which has been explored in the work done by Boadway and Treddenick.** From the Keynesian standpoint, this limits the cogency of their model; a $2 billion impact on the domestic financial market would certainly have an effect on domestic interest rates, and a change in the difference between domestic and foreign rates could affect the net flow of foreign capital, especially from the U.S. This change

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* Alcan Shipping Services Ltd., Shipping Options for Canadian International Deep-Sea Trade, Part II. Report prepared for Transport Canada's Research and Development Centre, August 1977, p. 2.72, Tables 2.36.

** R. Boadway, J. Treddenick, "A General Equilibrium Computation of the Effects of the Canadian Tariff Structure", in Canadian Journal of Economics, August 1978, Volume XI, No. 3, p. 433.

in flow would have a favourable effect on the balance of payments and exchange rate. The objection would be even stronger coming from a monetarist because factors of production, like capital, are supposed to be completely flexible. Such an omission would therefore only result in an overvalued shadow price.

On the other hand, the model takes no account of restrictive monetary policies which, to maintain the balance of payments equilibrium through a capital account surplus, try to attract foreign capital by offering relatively high interest rates, and reduce domestic economic activity by lowering both private investment and consumption. These policies, necessary whenever the current account registers a deficit, have, however, a cost, which can be lowered by reducing the current account deficit. Although they are dependent upon general economic conditions, such considerations lead to the conclusion that the shadow price of foreign exchange could well be higher than estimated by this model.

In Canada, the shadow price is not necessarily the same as the one estimated by Jenkins and Kuo. Theoretically, the tariff structure also hinders foreign trade, which reduces a nation's "social welfare". However, the removal of such tariffs could also lead to a lower level of welfare, at least in the short run, by reducing the output of protected sectors. Sectors that are currently protected now provide employment that the current labour market would not otherwise absorb. This objection is not valid in the long run, i.e. following an adjustment of the "work" factor, which could take a generation. It is therefore difficult to assess the results of tariffs properly and estimate accurately the shadow price of foreign exchange.

Some countries, particularly developing countries, are in great need of foreign currencies to meet their huge external debt obligations which, coupled with their high inflation rates,* forces them to seek sources of foreign currency other than foreign loans. In such cases, the absence of other avenues reflects a high shadow price. In the area of shipping, these governments encourage their national merchant fleets through cargo sharing measures in their favour and try to reduce their indebtedness.

4.6 Conclusion

Since the current account's "shipping" item does not reflect all the net effects of the shipping industry on the balance of payments, another method of estimation is required. This method uses the industry's value added as a base measure. Ship substitution hypothesis makes it easier to overlook the effect of a supply surplus in the current shipping market (over-tonnage). Since the investments involved are generally long term, the present value must be used in the analysis. Finally, the impact of a shadow price for foreign exchange, has to take into account for the final assessment of the shipping contribution to the balance of payments. This would represent not more than 7% for Canada.

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* Brazil is a good example. According to Phosphorus and Potassium, No. 126, July-August 1983, Brazil's foreign debt in 1983, totalled U.S. $90 billion. According to the I.M.F., during 1980, the inflation rate was 83% and the cruzeiro's depreciation in relation to the U.S. dollar was 54%.

Chapter 5

CHARACTERISTICS OF SHIPPING: SPECIAL CONSIDERATIONS IN MEASURING CONTRIBUTION

In Chapter 4, the idea of computing the direct contribution of the combined substitution of a ship's, and hence a fleet's, ownership and registry was associated with the concept of value added. The purpose of this chapter is to clarify the indirect contribution of substituting other components of the industry. Finally, it lists briefly certain characteristics of various markets where national participation in shipping is feasible.

5.1 Criteria for National Fleet

Although there is no universal definition for national fleet, a ship is generally considered a part of a national fleet when it flies the country's flag, i.e. when it is registered in that country. A second criterion should be added when analyzing the balance of payments impact: real ownership.

A ship's official ownership can be assigned to a company or an individual even if they are not the "real" owners. If a company belongs to its stockholders and it happens to own certain assets or to produce

facilities like ships, the real owners are the stockholders. Likewise, a ship's official owner can very well be a dummy stockholder. The following analysis attempts to avoid possible confusion stemming from the fact that the countries of residence of the two types of owners may differ and warp the results by using the concept of real ownership. Even though it is sometimes difficult to identify the country of residence of real owners, the following theoretical analysis requires the use of the real owner concept. For a more accurate estimate, it should be assumed that a ship's gross profits are wholly transferred to its real owners.

A vessel belongs to a national merchant marine if its real owner(s) and its registry belong to that national flag. The following examples will demonstrate the need of such criteria.

First Example: National ownership and non-national registry

The ship really belongs to residents of one country but is registered in another (e.g. under a flag of convenience). It is quite possible that such a ship's revenues are never repatriated by its owners, but kept in the other country to be later invested elsewhere. These revenues cannot, therefore, be considered as ensured capital inflow in the balance of payments of the owners' country of residence. They may of course be wholly or partly repatriated, as dividends for example, but, considering the existing disparities in the world's

fiscal systems -- including tax rates -- these capital inflows are, at best, uncertain. A more thorough measurement of the contribution should consider such cases as potential currency inflows.

Second Example: National registry and non-national ownership

The real owners of a ship are not residents of the country where it is registered. Part of the ship's revenues may leave the country as dividends, for example, reducing its benefits to the balance of payments of its country of registry. These net revenues cannot, therefore, be considered as a net capital inflow in the country's balance of payments.

These two first cases are asymmetrical. Globally speaking, i.e. when "shipping" accounts of all countries are studied concurrently, excluding these two cases would cause an inconsistent analysis. For a specific country, however, the possibility of excluding the revenues in both cases is real and must be considered in the analysis.

Third Example: National registry and ownership

> The real owners of a ship are residents of its country of registry: a ship's net revenues will all end up in the country of its registry, and only in this particular case can they be considered as a net capital inflow in the balance of payments of the real owners' country. The real owners could, of course, use these revenues for international transactions, but the transactions can be rightfully entered in their respective accounts without affecting the ship's contribution to the balance of payments.

If the stockholders of the company that owns the ship are not residents of the same country, the ship's real ownership is then multinational and only that share of the ship owned by residents of the country of registry is to be considered for the purpose of the country's merchant fleet. In this situation, the third case above applies to the share owned by residents and the second case applies to the balance. Thus, only the percentage of net revenues earned by residents can be considered to be clearly a contribution to the country's balance of payments.

5.2 Types of Participation

There are various ways of increasing national participation in shipping. These are classified into two groups: according to the degree of participation and according to the various trades where participation is possible.

5.2.1 Degrees of Participation

As described in Section 4.2, the value added is, an accurate measure for the contribution of changing a ship's ownership and registry from foreign to national under certain conditions, one of which stipulates that the national origin of inputs and the prices of these inputs cannot be changed. This section examines the various factors that must be considered when these two conditions are not met.

After substituting a national factor of production for a foreign one, the cost of the national factor does not necessarily have to be considered an entirely additional contribution. For instance, if the price of a national input is higher than the price of the foreign factor of production previously used, the <u>additional</u> cost decreases proportionately to the gains in foreign exchange brought in by the ship's national owners. In fact, since this cost is assumed by the owners, it is no more than a transfer of national currency between residents. Such a transfer does not affect the balance of payments. The cost of the foreign input must therefore be used as a base in computing the marginal contribution of input substitution.

Moreover, only the purely foreign part of the input substituted by a purely national one must be considered as an additional foreign exchange contribution. If, for example, 40% of the substituted input's components are national and 30% of the national input's components are foreign, the additional contribution is limited to 30% of the cost of the substituted input, even if both are of equal value (unless the national input is cheaper, which is doubtful since operators will try to keep their costs to a minimum).

Nationality of a ship as defined on the basis of ownership and registry is not the only ship characteristic that makes it more or less national. Others include:

(i) crew
(ii) shipbuilding (design, materials, equipment)
(iii) management
(iv) financing
(v) insurance, and
(vi) other characteristics.

(i) The Crew

A crew's country of residence can influence a ship's contribution to the balance of payments: the more Canadian a crew is, the more the ship contributes to Canada's balance of payments, provided, of course, that the wages paid to and spent by Canadian crews at home exceed the wages foreigners doing the same work would spend in Canada. This necessary condition generally holds true.

Ship registry requirements in some countries stipulate a higher national crew content. If this leads to higher crew costs,* profits will

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* Pierre Bauchet has compared the crew costs of a French and a Liberian ship. On an annual basis, the difference amounts to $150 000 or 64% more for the French crew. This accounts for more than half of the difference between the overall costs of both ships. The same would apply to Canadian crews if their wages were equivalent to those of French crews.

diminish if international competition does not leave room to raise freight rates accordingly. Moreover, because the profit margin of the shipping industry is generally low, even where crews are not a primary cost factor, any sharp increase in crew costs can significantly reduce this small margin. For national shipping to be profitable, a country would probably have to grant it monetary incentives.

Because the rate of return on investment has little effect on the balance of payments, a higher national crew content would likely contribute more in foreign exchange savings or inflow.

In fact, whatever the crew's nationality, only spending abroad is to be considered as a currency outflow.

The additional currency contribution earned through crew substitution corresponds, therefore, to the total wages of the foreign crew that is substituted, minus:

(a) spending in Canada by this foreign crew before substitution, and

(b) spending abroad, after substitution, by the new Canadian crew.

In fact, before substitution, only that share of wages paid to foreign crews and spent outside Canada can be considered as an outflow of

currency; new foreign spending by the new Canadian crew must then be deducted from the total since it represents a new outflow of currency, and the result represents the net savings of currency for Canada through crew substitution.

The crew substitution illustrated in Figure 2, shows the following: the smaller the total foreign crew wages, the smaller will be the additional contribution due to crew substitution; the more foreigners spend in Canada, the smaller the contribution will be; and the more Canadians spend abroad, the smaller the contribution will be. Theoretically, the contribution can amount to zero or even be negative. The following is an example: if the Canadian crew's total wages are 50% higher than the foreign crew's, and if foreign crews spend 40% of their wages in Canada while Canadians spend the same percentage abroad, crew substitution will contribute nothing to the balance of payments.

(ii) Shipbuilding

Since shipping is a capital intensive activity, the purchase of a ship and where it is built play a major role in the analysis of the industry's impact on the balance of payments.* If, by promoting its merchant marine, a country increases its shipbuilding activities because it is competitive in the world shipbuilding market, the contribution to its balance of payments could be higher than the mere value added of the transport industry. World competitiveness is not, however, the only criterion for

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* A ship's amortization and interest payments account for 12 to 45% of the costs, depending on the type of ship and the studies consulted.

success: national availability of the required resources is as important. In fact, if many of the inputs were of foreign origin and if the remaining inputs were used in various other industries at comparable levels of world competitiveness, the net effect on the country's balance of payments could be negative.

Ship and equipment design is very specialized and most of it is probably of foreign origin in the Canadian context. The competitiveness of Canadian shipyards is not very high,* and would be plausible internationally only under special circumstances such as an urgent need for new vessels in the world fleet, in other words, when the world economy is strong (since demand for ships is a result of a great demand for shipping which, in turn, is a result of a high level of world economic activity). Under such conditions other Canadian industries (particularly those that are export-oriented and therefore important to the balance of payments) are also used at a high capacity, making it more profitable to invest factors of production in activities other than shipbuilding.

Another major problem is that some foreign shipyards are subsidized by their governments. Since these shipyards are already at least as competitive as Canadian shipyards, the subsidies really reduce their ship production costs. By allowing Canadian shipowners to benefit from such discounted prices, these foreign governments make it possible for them to either maintain low rates or increase their profits. Consequently, non-

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* According to Alcan Shipping Services Ltd., the production costs of bulk carriers are 70 to 85% higher in Canada than for those built in Japan, while those built in Europe cost 50 to 67% more than the Japanese.

subsidized Canadian shipyards are unable to help Canada save on foreign exchange. However, there are some economic advantages to this situation: Canadians pay less for their ships.

(iii) Management

Management is one input element that is easily repatriated. If the country has management resources, repatriating them has a favourable effect on the balance of payments to be added to the basic contribution. Management expenses account for only 4% of the total costs (capital cost included).*

(iv) Financing

To help their shipyards, some governments offer financial assistance to any potential buyers of new ships, whether or not they are residents. The situation would be different in the case of purchasing a second-hand ship since it cannot be used as collateral. Unless it has excellent liquid assets, a new company will therefore experience problems in purchasing a second-hand ship. For countries that are already net importers of capital, developing a merchant fleet through loans will improve the inflow of foreign exchange through this account at the time of borrowing. Since all loans have to be repaid, the repayment of foreign loans is an outflow of foreign exchange during the reimbursement period, with uncertain effects on the overall balance of payments. The net effect will depend on the borrowing terms, real interest rates, etc. The importance of such uncertainty is

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* R.O. Goss, Ibid., Tables 3.1 and 3.2.

proportionate to the amounts at stake. However, the cost can always be estimated using appropriate methods.

(v) Insurance

A shipowner purchases an insurance policy to protect himself financially against any unforeseeable disbursements due to accidents. On average, and this is normal, risks taken by insurance companies are at least covered by the premiums paid by shipowners. Since most of these insurance companies are foreign, in Canada, the premiums represent an outflow of foreign currency for the country. Insurance costs account for 1% to 4% of the total costs (capital cost included).*

(vi) Other Inputs

Other inputs such as supplies and fuel oil are either not very transferable from country to country or consist largely of foreign factors at margin. It is unlikely that ship substitution would influence the national origin of these inputs and they are, therefore, generally disregarded in the assessment of the contribution to the balance of payments. However, their contribution could be more significant if certain inputs could be repatriated without causing shortfalls in other industries.

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* According to Pierre Bauchet, the gross cost of insurance (before any disbursements in case of accident) account for 1.3% of the overall operating costs of a French ship and for 2.4% in the case of a Liberian ship. According to R.O. Goss (Ibid.) this amounts to 3.9%.

5.2.2 Various Markets

International shipping is not a homogeneous economic activity, but rather subdivided into specific trades not accessible to all ships. Some trades are restricted to bulk carriers or container ships; others have physical constraints on their routes (e.g. the Panama Canal) which, under certain conditions, restrict access of certain ships (those larger than Panamax, for example). The economic conditions that govern these trades can influence the contribution in foreign exchange earned by a national-flag ship. It is therefore important to analyze investment opportunities in each trade prior to making investment decisions. A general analysis is inadequate.

The various trades differ in various respects, including types of ships used.* Since cost structures and modes of operation vary from one type of ship to another, the contribution of each to the balance of payments will also vary. For example, compared to carriers of general cargo, bulk carriers are more capital intensive and require smaller crews.

The type of service offered can also affect currency earnings. For example, it is easier for a home-based liner company to make use of national inputs than it is for a tramp operator. In fact the latter must, by definition, be more flexible in case it is assigned to cross-trading where it will have less access to national inputs.

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* UNCTAD, Creating or Developing the Merchant Marines of Developing Countries, UN, 1969, p. 41.

This does not mean, however, that a country's import routes (e.g. for oil products) are inaccessible. A non-exporting country's ships can very well carry its imports or participate in cross-trading. In fact, whether they are importers or exporters, trade partners have equal shipping opportunities in principle.

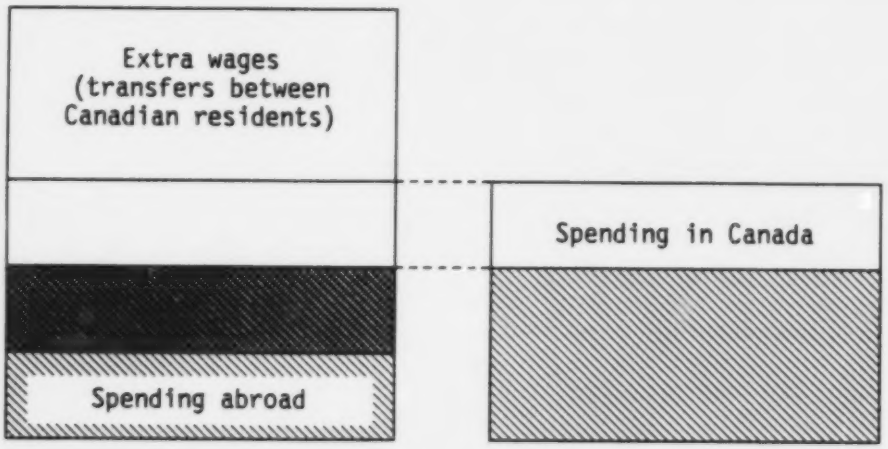
As pointed out in the next chapter, some trades are subject to the impact of the protectionist approach taken by a number of governments towards their national fleets. It must not be forgotten that when a Canadian ship operates in a route (after substituting for a foreign ship), it cannot expect to get the same preferential treatment given the latter by the former country of registration; nor can it take for granted that it will keep on carrying that ship's cargo volumes. The revenues of a future national fleet therefore cannot be evaluated on the basis of the revenues of the foreign ships for which national ships are substituted.

5.3 Conclusion

For a more accurate assessment of its contribution to the balance of payments, the real owners of a national fleet must be residents of the country of registration. By transferring some inputs to their country, the balance of payments could benefit not only from the value added, but from additional currency inflows as well. Transfers of inputs are, however, subject to certain constraints. Since foreign exchange earnings depend upon a ship's revenues and expenses, as well as the type of service provided and the level of protectionism, and since these vary from trade to trade, the analysis must be carried out according to trade type.

Figure 2

ADDITIONAL CONTRIBUTION
OF CREW SUBSTITUTION TO THE BALANCE OF PAYMENTS



Additional contribution, to be added to the value added.

Outflow of currency in each case.

* Contribution is defined by:

Contribution = TWF - aTWF - bTWC

where TWC is the total wages of a Canadian crew,
TWF is the total wages of a foreign crew,
a is the percentage spent in Canada by non-Canadians, and
b is the percentage spent by Canadians abroad.

Chapter 6

CONSTRAINTS IN NATIONAL PARTICIPATION

This chapter makes a distinction between two sources of constraints: those created by the government and those created by the economic environment itself. The examination of these constraints helps to understand how feasible it would be for a country to increase its participation in shipping to improve its balance of payments position.

6.1 Institutional Constraints

In an international activity like shipping, numerous government interventions modify business entry conditions. By increasing institutional constraints, for a number of reasons, government interventions alter the economic environment. It is therefore advisable to examine the institutional constraints that affect the economic environment for the fixed assets in question before making long-term investment decisions. Reviewing the various barriers to participation can help measure the potential for the shipping industry to improve its contribution to the balance of payments. There are two types of institutional constraints: government policies that ensure that part of the country's trade is carried by national lines, and a wide range of other types of government intervention in shipping. Some will be reviewed in detail, but this study does not provide an in-depth examination of the

problem. The purpose of this section is to show that this kind of intervention restricts somewhat participation in the shipping industry.

(i) Cargo Sharing

Cargo sharing is the result of more or less direct government intervention aimed at ensuring a minimum level of trade to its national-flag fleet. This minimum is governed by several criteria, among which are the national fleet's capacity and the desire to maintain a certain level of national exports. Cargo sharing can be the result of unilateral action or bilateral or multilateral agreements. The UNCTAD Code of Conduct can be used as moral justification for such interventions. There are, however, many types of government intervention that have a common effect of constraints against national participation in shipping. The effect is increased restrictions on cross-trading, either directly where they are applied, or indirectly by increasing third-country shipping supply on the other routes.

In fact, although cross-trading is not affected directly by such interventions, an increase in shipping capacity may result because ships excluded from routes where these interventions apply will concentrate on these free routes (cross-trade). This limits the participation of national fleets with limited traffic between the world and their home countries because they are forced to operate in increasingly competitive trades.

As noted in Chapter 4, some developing countries have opted for such a course to ensure their national fleets a large share of their trade, while cargo sharing allows them, among other things, to provide a surplus in

the shipping account. This compensates, at least in part, for deficits due to interest payments of large foreign debt obligations.

(ii) Other Government Interventions

There are many kinds of government intervention and they affect other aspects of shipping. Distortions are primarily created by the international heterogeneity of interventions. When two national merchant fleets have similar cost structures prior to subsidies, the less subsidized fleet is no match for the other. By protecting their fleets against foreign competition with direct subsidies, some governments therefore discriminate against unsubsidized fleets by blocking their access to certain trades, which makes it impossible for some ships to turn a profit and contribute to their country's balance of payments. Likewise, by granting their shipyards subsidies or fiscal advantages, some governments make certain foreign shipyards less attractive to ship buyers.

The major factor which disturbs the development of a truly national fleet is the existence of the flags of convenience. Since the ship, under open registry can reduce significantly its operating costs and tax payments, they are very harmful to national fleets which are not subsidized, nor granted special fiscal treatment. Although such interventions can partly reduce ocean freight rates, national non-participation in shipping reduces the contribution of the shipping industry to the overall balance of payments.

Transferring a flag of convenience registry is no simple matter when the new country of registry does not offer similar advantages. In fact,

flag of convenience countries are often less demanding with regard to taxes, safety standards and crew nationality. The operating costs of a flag of convenience ship are therefore lower than those of a similar ship subject to stricter requirements. In the highly competitive international market, a government wishing to repatriate the registration of flag of convenience ships must, unless it has recourse to coercive measures (e.g. cargo sharing), assume the costs entailed by the repatriation. The benefits of doing so are not clear.

6.2 Economic Constraints

Even when increased national participation in shipping improves the balance of payments position and institutional constraints are overcome, the development of a national merchant marine can still be hampered by economic constraints.

(i) Scarcity of Resources

In a recession, when there is a surplus of manpower and other resources, it may appear untimely to consider scarcity of resources as an economic constraint. The fact remains, however, that shipping requires specialized resources that are not necessarily found among those at hand. In a small national economy, some of these resources are quickly used to full capacity and others must be imported if production objectives are to be met. When this limit is reached, the balance of payments bears the brunt of the negative consequences.

In shipbuilding, the origin of the factors of production has a definite impact on the balance of payments. This issue is so complex that it deserves a study all its own. It is worth noting, however, that transferring resources from one industry to another may have repercussions on the balance of payments because such transfers can reduce the output of the first industry and increase that of the second. A drop in production results in a decline in exports or a rise in imports, and vice-versa. Other things being equal, if an increase in production does not wholly compensate for the effects of the decrease, the balance of payments will deteriorate. To judge whether a given industry contributes more to the balance of payments than another, its production value (taking into account the resources required) must be compared to that of the other industry using the same resources. This must not be forgotten when substituting a national input for a foreign one, or a Canadian ship for a foreign one. For instance, the extra Canadian fuel oil needed by a national fleet should be readily available (i.e. a surplus) so as to avoid any disturbances in other Canadian industries that use fuel oil. The balance of payments could benefit from such a surplus, or suffer otherwise.

(ii) Mobility of Human Resources

A comparative study of production does not take into account the mobility of factors of production. Yet this issue brings to light other constraints. Shipbuilding requires relatively specialized skills that could be used in other sectors, such as the construction industry. Manpower mobility is far from perfect, but it exists to a great extent and

shipbuilding would not be much affected by such a constraint. However, the problem of quantifying mobility has not yet been solved.

Modern ships require skilled and semi-skilled workers that may be difficult to find in a country with no maritime tradition if there is rapid development in national shipping. An alternative solution would be the short-term employment of foreign crews while training national personnel. This, however, would not be as great a constraint for Canada under a planned merchant fleet expansion plan as it would be some developing countries lacking the required resources. On the other hand, the special working conditions in shipping could restrict the Canadian content of crews.

(iii) Mobility of Capital

Traditionally, capital is considered as a perfectly mobile resource both domestically and internationally. In practice things are different. Let us suppose there are two major categories of capital: loans and bonds, and direct investment. Some countries do not always accept foreign control of newly established national corporations; they screen direct foreign investments, and the screening mechanism restrains the inflow of such capital. On the other hand, foreign loans are widely accepted. International mobility of capital is, therefore, achievable in part.

Some less developed countries have reached such a high level of indebtedness that they will have a hard time borrowing more to increase their participation in shipping. Mobility of capital is not in itself an economic constraint; the constraint is more likely to be the scarcity of capital.

(iv) Inter-Industrial Mobility of Investments

The advantage possessed by shipping is that its capital assets are readily transferable internationally. Most other industries do not have this advantage. Even if the textile industry were less profitable economically and from the balance of payments standpoint, a textile mill operator would have a hard time transferring his equipment and buildings to shipping by selling his fixed assets on the international market. In that sense, the immobility of investments represents, at least in the short term, a real constraint to the development of national shipping.

6.3 Conclusion

Cross-trading is becoming less and less accessible and countries wishing to augment their level of participation are increasingly limited to traffic between their home countries and the rest of the world or to cross-trading within the OECD. Foreign government intervention aimed at protecting national shipping through subsidies or other forms of financial assistance reduces the cost of shipping for Canadians, but at the same time restricts Canada's opportunities to take part in it. Flags of convenience have the same effect. Finally, the scarcity of national economic resources requires that an inter-industrial analysis of the impact on the balance of payments be carried out before drawing any definite conclusions on this issue.

Chapter 7

PROPOSING A METHODOLOGY FOR QUANTITATIVE ASSESSMENT

The methodology described in this chapter permits an assessment of the possibility of measuring the contribution of national shipping development to a country's balance of payments. It identifies a number of avenues of research related to the various problems encountered in this study.

7.1 Future Demand for Shipping

Although Canada's annual overseas trade volume is significant, only a small proportion of this traffic is carried by its national fleet.* Theoretically, Canadian carriers do have access to their home trades. A quantitative study should therefore examine these potential markets first, especially since Canadian ships have less and less access to cross-trade and data on these markets are more difficult to obtain.

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* According to the CTC Research Branch, of the 134 566 000 metric tonnes shipped by sea in 1980 between Canada and overseas countries, only 1 078 000 tonnes, or 0.8%, were carried by national lines.

Statistics Canada's data banks can help quantify past demand for shipping by market category. But first, each market must be classified in terms of its commodity categories, which correspond roughly to the type of carriers used, and by origin and destination. To avoid too wide a margin of error, the methods for assessing future demand for each market must be reliable. Since optimistic projections can overestimate the foreign exchange contribution, it is preferable to stick to as realistic a projection as possible and caution may have to be taken in the analysis of the results. The main objective of the research is still, however, to establish an overall methodology for computing the shipping industry's contribution to the balance of payments.

7.2 The Potential National Supply

Once markets are identified, the composition of a national fleet can be established according to ship type. If the approach of the UNCTAD Code of Conduct is taken, national carriers could not take over more than 50% of the market. In certain cases, however, the share could be larger. Under a cargo sharing regime, a trade share must be subject to the specific agreements in force between Canada and its trading partners.

7.3 Cost Structure

Next, the cost structure of each type of ship must be estimated, taking into account technical data on items like fuel consumption, crew size, ship costs and amortization. The operating costs of such ships are then

examined in connection with future routes, cargo movements etc. The method makes it possible to estimate expenditures for a typical business year.

7.4 Revenue Structure

By establishing a ship's annual cargo movement and applying prevailing tariffs, it is possible to estimate a ship's future revenues. Computations based on such structures can, in turn, be used as a basis for various assumptions in a number of different projections.

7.5 Computation of the Basic Contribution

The computation of the basic contribution of national shipping to the balance of payments can be then applied to various trades according to various scenarios. To compute the basic contribution,* expenditures need only be subtracted from revenue, as noted in Chapter 4.

7.6 The Marginal Contribution of Input Substitution

For complete results, one must also take account of the net contribution of substituting national inputs for foreign inputs. To simplify matters, this is referred to as "input substitution". Input substitution

---

* Since 1983, Statistics Canada's Business Finance Division has been providing government agencies with a balance-sheet for groups of companies incorporated in Canada. For a group of Canadian companies operating exclusively in shipping, it becomes possible to calculate the profits (before taxes and subsidies) generated by the group's fleet and hence its basic contribution.

creates three types of disturbances: the first alters the cost structure, the second increases the contribution of foreign exchange through savings, and the third reduces the input's availability to other industries.

A ship's profitability, and hence the break-even point, can be established by studying the development of both the cost and revenue structures. A ship's profitability allows the governments to decide whether or not the industry needs assistance. Such a need is not, however, a justification for assistance; contribution of foreign currency alone cannot be a criterion for assistance. Many other economic factors come into play, and they must all be taken into account when reviewing a request for assistance. The purpose of this report, however, is to analyze only the contribution in foreign exchange, not to argue in favour of government assistance.

Substitution of an input produces a rise in domestic demand for it. The effects of such an increase are many. If maximum production capacity is reached, an increase in production of the input will follow the initial rise in demand. Depending on the capacities of producers, the price of an input will either return to its initial level, remain at the higher level, or even drop if producers take advantage of economies of scale. In other words, a variation in price is still possible if increased demand for the input produces an equivalent increase in production. Since price variations cannot be quantified a priori, it is impossible to forecast the indirect effects it will have on other industries using the same input.

There is less uncertainty when the substitution is for an already imported input. An increase in demand will translate directly into increased imports of the input, offsetting the effects of the substitution's contribution to the balance of payments.

To estimate the net contribution in currency generated by input substitution, the analysis must not limit itself to expenditures relating to the input to be substituted. Both the additional cost and the cost of the imported portion of the input must also be deducted from these expenditures. If, following domestic market adjustments, the scarcity of an input leads to a drop in production of another commodity, more foreign currency will be lost directly or indirectly. Only a market analysis of each input can quantify all these events.

7.7 Shipbuilding

As pointed out in Chapter 4, fleet development requires that both ship ownership and registry be transferred to Canadians. That does not mean, however, that new ships should be built in Canada. Some ships to be substituted may have reached the end of their economic life and will have to be replaced by new ones. Even when the disadvantages of an expanding world fleet are taken into account, developing a Canadian merchant marine will, in turn, increase activity in Canadian shipyards.

As with other input substitutions, domestic production capacity must be reviewed before being able to establish the net result of a ship substitution. Measuring this input may be more difficult, however, because,

as a production activity, shipbuilding also uses inputs whose national origin has a direct impact on the value of contribution of foreign currency.

7.8 Conclusion

It is impossible, at this stage of the research, to prove concretely whether or not a national merchant marine improves a country's balance of payments. Since no conclusions can be drawn from the balance of payments shipping account, another method must be found to answer that question. According to some hypotheses, the basic contribution can be estimated through a ship's rate of return, a possibility that merits thorough study, especially since it is known that input repatriation can substantially increase the shipping industry's contribution to the balance of payments. Where repatriation is both feasible and cost-effective, it should be carried out. But first it is necessary to study the feasibility of increased national participation.

Opportunities for national participation are not unlimited. Foreign government interventions intended to protect their national-flag ships and the use of flags of convenience help keep tariffs low, which limits the foreign exchange contribution that increased future Canadian participation would generate. Increasing tariffs does not solve the problem because it produces a negative effect on international trade. A priori, it seems unlikely that developing the Canadian merchant fleet would contribute significantly to the country's balance of payments. Since the cost of some national inputs often exceeds the cost of their foreign counterparts, repatriating them would greatly reduce the already small profit margin of

shipping. If financial assistance appears to be in order, it cannot be justified solely on the basis of balance of payments contributions. The second part of this study will attempt to measure quantitatively the potential contribution of a national fleet to Canada's balance of international payments using the theoretical framework developed in this report.

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Appendix

FOUR FORMS USED BY STATISTICS CANADA TO COLLECT DATA ON INTERNATIONAL TRANSACTIONS RELATED TO MARITIME TRANSPORT OF GOODS

Statistics Canada Statistique Canada

Balance of Payments
International and Financial Economics Division
OTTAWA K1A 0T6

CONFIDENTIAL

BP – 20

Keep one copy for your fil

GREAT LAKES – ST. LAWRENCE SEAWAY SHIPPING TRANSACTIONS, 1985

Please correct any mistakes in Name or Address

Telephone: (613) 990-9051
Telex: 053-3585

Authority – Statistics Act, Statutes of Canada, 1970-71-72, Chapter 15.

Information collected under the Statistics Act is treated in strict confidence and is specifically exempt from being released under the Access to Information Act.

Statistics Canada would appreciate your assistance in its compilation of Canada's balance of international payments. Kindly return a completed copy of this form **by April 30, 1986.**

1. Total tons of cargo (excluding iron ore) outward from Canada to United States ports	tons	
2. Total freight earnings, prepaid and collect, on above cargo (excluding iron ore)	$	
3. Total tons of iron ore carried from Canada to United States ports	tons	
4. Total freight earnings, prepaid and collect, on above iron ore carried to United States ports	$	
5. Total tons of United States grain carried intransit from the United States to Canadian ports	tons	
6. Total freight earnings, prepaid and collect, on above United States grain carried intransit from the United States to Canadian ports	$	
7. Total tons of United States coal carried in transit from the United States to Canadian ports	tons	
8. Total freight earnings, prepaid and collect, on above United States coal carried in transit from the United States to Canadian ports	$	
9. Total amount paid to non-residents for charter of vessels (specify country)	$	
10. Total income from non-residents for charter of vessels (specify country)	$	
11. Crew wages and other ship expenses paid in United States ports	$	
12. Total tons of cargo inward (imports) from United States to Canadian ports (excluding grain and coal reported in items 5 and 7)	tons	
13. Total freight earnings, prepaid and collect, on above inward cargo from United States to Canadian ports	$	

Any comments or qualifications which you feel might be usefully added to this material would be appreciated.

Date	Telephone Telex	Name and title of responsible officer	Signature

4–2500–16: 6-1-86 TB/CT – REG. B101403

Français au verso

Canada

Statistics Canada Statistique Canada

Balance of Payments
International and Financial Economics Division
OTTAWA K1A 0T6

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Keep one copy for your file

REPORT OF CARGO, EARNINGS AND EXPENSES OF OCEAN VESSELS OPERATED BY NON-RESIDENT INTERESTS[1], 1985

Please correct any mistakes in Name or Address

Telephone: (613) 990-9051
Telex 053-3545

Authority - Statistics Act, Chapter 15, Statutes of Canada, 1970-71-72

Information collected under the Statistics Act is treated in strict confidence and is specifically exempt from being released under the Access to Information Act.

Statistics Canada would appreciate your assistance in its compilation of Canada's balance of international payments, kindly return a completed copy of this form by **April 30, 1986.**

Steamship Lines covered by this report _____

(Montreal offices should report for all Eastern ports including the Upper St. Lawrence and Great Lakes; Vancouver for all Western. When this is not possible, please list below the ports covered)

	Vessels operated by					
	United States interests	United Kingdom interests	EEC[2] interests (excluding U.K.)	Japanese interests	Other OECD[3] interests	Other foreign interests
	(tons)					
1. Total tons of inward[4] cargo ☐long, ☐short or ☐metric						
(a) Container cargo						
(b) Bulk and other general cargo (including cargoes carried by tramps)						
	($'000 Canadian)					
2. Total (prepaid and collect) inward[4,5] freight earnings on above cargo						
3. Total expenses[6] of vessels in Canada						

Supplementary questions and remarks regarding the material provided

Please indicate the amounts paid in Canada for: (a) ship repairs . . . . . Cdn. $'000 _____

(b) bunker fuel . . . . . Cdn. $'000 _____

(c) servicing foreign fishing vessels . . . . . Cdn. $'000 _____

(d) on-payments to rail, truck and water carriers on through traffic . . . . . Cdn. $'000 _____

if included in item 3 above.

FOOTNOTES

[1] This questionnaire is intended to be completed by shipping agents or firms which perform a shipping agency function on behalf of foreign operated ocean vessels. Please give all information possible for ships entering ports under your jurisdiction, even if knowledge of their transactions in other ports is not completely known. In the case of tramp and other casual vessels with which you deal, make estimates if necessary.

[2] The EEC includes the following countries: Belgium-Luxembourg, Denmark (including Greenland), France, Greece, Ireland, Italy, the Netherlands and West Germany.

[3] Other OECD includes the following countries: Austria, Finland, Iceland, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, Australia and New Zealand.

[4] "Inward" means to Canada from points outside of Canada. Domestic coast-wise traffic as well as cargo unloaded in Canada destined for the United States is to be excluded. Include estimates of open voyage accounts at December 31 arising from voyages during the year.

[5] Where the exact amount of prepaid freight revenue is unknown, please include an estimate to cover.

[6] "Total Expenses" is intended to include all outpayments in Canada on account of vessels in these categories for which you act as agent, e.g. crew wages and advances, harbour charges, pilotage, towage, wharfage, stevedoring (inward and outward when paid by vessels), agency fees, fuel and supplies, repairs, on-payment to rail, truck, water and other carriers on through-traffic if an amount corresponding to the on-payments has automatically been included in inward freight earnings. Outpayments for vessels on outward and inward voyages, including vessels inward in ballast, are to be included.

Date	Telephone Telex	Name and title of responsible officer	Signature

4-2500-60: 6-1-86 TB/CT - REG. 8101419

(Français au verso)

Statistics Canada Statistique Canada

Balance of Payments
International and Financial Economics Division
OTTAWA K1A 0T6

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REPORT OF CARGO, EARNINGS AND EXPENSES OF OCEAN VESSELS OPERATED BY CANADIAN COMPANIES, 1985

Please correct any mistakes in Name or Address

Telephone: (613) 990-9051
Telex 053-3585

Authority - Statistics Act, Chapter 15, Statutes of Canada, 1970-71-72
Information collected under the Statistics Act is treated in strict confidence and is specifically exempt from being released under the Access to Information Act.
Statistics Canada would appreciate your assistance in its compilation of Canada's balance of international payments. Kindly return a completed copy of this form **by April 30, 1986.**

Steamship lines _____

Canadian ports covered by this report _____
(e.g. Halifax, Saint John, Montreal, Vancouver, etc.)

	Tons	Thousands of Canadian dollars
1. (a) Total tons of cargo inward from non-Canadian ports (state whether long, short, or metric tons)		XXXXX
(b) Total tons of cargo outward to non-Canadian ports (state whether long, short, or metric tons)		XXXXX
2. Total freight earnings (prepaid and collect) on cargo inward to Canada from other countries	XXXXX	

	United States	United Kingdom	European[1] Economic Community (excluding U.K.)	Japan	Other[2] OECD	Other foreign countries
	(thousands of Canadian dollars)					
3. Total freight earnings (prepaid and collect) on cargo outward from Canada						
4. Total income from charter of vessels to residents of						
5. Total amount paid for charter to owners of vessels resident in[3]						
6. Total freight earnings on cargo between foreign ports unloaded in						
7. Total expenses of vessels paid by Canadian operator in[4]						

Supplementary questions

(a) Total tons of cargo unloaded in the United States on which revenue reported in 3. and 6. (above) was earned:

liner . . . . . Tons _____

tramp . . . . . Tons _____

(b) Total tons of cargo outward from the United States:

liner . . . . . Tons _____

tramp . . . . . Tons _____

(c) Total freight earnings on cargo reported above in (b):

$'000 _____

FOOTNOTES

[1] The European Economic Community includes the following countries: Belgium-Luxembourg, Denmark (including Greenland), France, Greece, Ireland, Italy, the Netherlands and West Germany.

[2] Other OECD includes the following countries: Australia, Austria, Finland, Iceland, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland and Turkey.

[3] Charter payments are to be distributed geographically according to the country of residence of the party from whom the vessel was chartered.

[4] Total expenses in item 7. is intended to include all out-payments made in foreign countries by Canadian operators on account of shipping business, e.g. crew wages and advances, harbour charges, canal dues, pilotage, towage, wharfage, stevedoring (inward and outward when paid by vessels), agency fees, fuel and supplies, repairs and on-payments to rail, truck, water and other carriers on through traffic. Distribute expenses to U.S., U.K. and other areas according to where the payments were made. Include estimates of open voyage accounts as at December 31 arising from voyages during the year.

Any comments or qualifications which you feel might be usefully added to this material would be appreciated

Date	Telephone Telex	Name and title of responsible officer	Signature

4-2500-61: 6-1-86 TB/CT-REG. 8101420

(Français au verso)

Statistics Canada Statistique Canada

Balance of Payments
International and Financial Economics Division
OTTAWA K1A 0T6

CONFIDENTIAL

REPORT ON IMPORTS OF CRUDE PETROLEUM AND PRODUCTS AND OTHER SHIPPING OPERATIONS, 1985

BP – 26

Keep one copy for your file

SI VOUS PRÉFÉRÉZ CE QUESTIONNAIRE EN FRANÇAIS, VEUILLEZ COCHER ☐

Please correct any mistakes in Name or Address

Telephone: (613) 990-9051
Telex: 053-3585

Authority – Statistics Act, Statutes of Canada, 1970-71-72, Chapter 15.

Information collected under the Statistics Act is treated in strict confidence and is specifically exempt from being released under the Access to Information Act.

Statistics Canada would appreciate your assistance in its compilation of Canada's balance of international payments. Kindly return one completed copy of this form **by April 30, 1986.**

A. IMPORTS OF PETROLEUM

Report all dollar amounts in thousands of Canadian dollars

1. Total quantity of crude petroleum, petroleum oils and gasoline imported into Canada during the year:

(a) via Eastern ocean ports:

(i) Portland, Maine . . . . . barrels ☐ or short tons (net) ☐ _____

(ii) Other Eastern ports . . . . . barrels ☐ or short tons (net) ☐ _____

(b) via Western ocean ports . . . . . barrels ☐ or short tons (net) ☐ _____

(c) via other ports (please specify) . . . . . barrels ☐ or short tons (net) ☐ _____

2. Total cost of ocean freight paid on this volume: (see instructions)

(a) via Eastern ocean ports:

(i) Portland, Maine . . . . . $'000 _____

(ii) Other Eastern ports . . . . . $'000 _____

(b) via Western ocean ports . . . . . $'000 _____

(c) via other ports . . . . . $'000 _____

4–2500–62.1: 6-1-86 B101421

3. How much of this cost was paid to owners or operators of vessels resident in: (see instructions)

Report all dollar amounts in thousands of Canadian dollars

(a) Canada . . . . . $'000 _____

(b) United States . . . . . $'000 _____

(c) United Kingdom . . . . . $'000 _____

(d) EEC countries (excluding U.K.) . . . . . $'000 _____

(e) Japan . . . . . $'000 _____

(f) Other OECD countries . . . . . $'000 _____

(g) All other countries . . . . . $'000 _____

4. Name and address of Canadian owners or operators paid in item 3. (a) above, if applicable.

_____

_____

_____

5. Total expenses of vessels in Canadian ports paid by owners resident in:

(a) United States . . . . . $'000 _____

(b) United Kingdom . . . . . $'000 _____

(c) EEC countries (excluding U.K.) . . . . . $'000 _____

(d) Japan . . . . . $'000 _____

(e) Other OECD countries . . . . . $'000 _____

(f) All other countries . . . . . $'000 _____

6. Canadian agents to which tankers were consigned: _____

B. OTHER SHIPPING OPERATIONS

1. Total tons of cargo carried outward by your company (including petroleum and other commodities) to non-Canadian ports . . . . . Short tons _____

Please specify commodities: _____

2. Total freight earnings on above cargo outward from Canada to:

(a) United States . . . . . $'000 _____

(b) United Kingdom . . . . . $'000 _____

(c) EEC countries (excluding U.K.) . . . . . $'000 _____

(d) Japan . . . . . $'000 _____

(e) Other OECD countries . . . . . $'000 _____

(f) All other countries . . . . . $'000 _____

3. Total tons of cargo carried inward by your company (excluding petroleum reported in item A–1) from non-Canadian ports: Short tons _____

4. Total freight earnings on above cargo inward to Canada from other countries . . . . . $'000 _____

5. Income from vessel charters to residents of:

(a) United States . . . . . $'000 _____

(b) United Kingdom . . . . . $'000 _____

(c) EEC countries (excluding U.K.) . . . . . $'000 _____

(d) Japan . . . . . $'000 _____

(e) Other OECD countries . . . . . $'000 _____

(f) All other countries . . . . . $'000 _____

6. Total amount paid for charter to foreign owners or charterers resident in: (exclude charter payments recorded in items A–2 and A–3) (see instructions)

(a) United States . . . . . $'000 _____

(b) United Kingdom . . . . . $'000 _____

(c) EEC countries (excluding U.K.) . . . . . $'000 _____

(d) Japan . . . . . $'000 _____

(e) Other OECD countries . . . . . $'000 _____

(f) All other countries . . . . . $'000 _____

7. Total freight earnings on cargo carried by company between foreign ports unloaded in:

(a) United States . . . . . $'000 _____

(b) United Kingdom . . . . . $'000 _____

(c) EEC countries (excluding U.K.) . . . . . $'000 _____

(d) Japan . . . . . $'000 _____

(e) Other OECD countries . . . . . $'000 _____

(f) All other countries . . . . . $'000 _____

8. Total expenses of vessels in foreign ports paid by your company as a Canadian operator in:

(a) United States . . . . . $'000 _____

(b) United Kingdom . . . . . $'000 _____

(c) EEC countries (excluding U.K.) . . . . . $'000 _____

(d) Japan . . . . . $'000 _____

(e) Other OECD countries . . . . . $'000 _____

(f) All other countries . . . . . $'000 _____

C. SALES OF MARINE FUELS AND LUBRICANTS

1. Total tons of marine fuels (bunkers) and lubricants sold to non-resident operated vessels in Canadian ports: Short tons _____

2. Total earnings on above sales of marine fuels and lubricants to foreign vessel operators resident in:

(a) United States . . . . . $'000 _____

(b) United Kingdom . . . . . $'000 _____

(c) EEC countries (excluding U.K.) . . . . . $'000 _____

(d) Japan . . . . . $'000 _____

(e) Other OECD countries . . . . . $'000 _____

(f) All other countries . . . . . $'000 _____

D. TRANSPORTATION OF CRUDE PETROLEUM FROM WESTERN TO EASTERN CANADA

1. Total quantity of crude petroleum transported via the United States by pipeline from western to eastern Canada . . barrels _____

2. Total amount paid to Lakehead Pipe Line Company Inc. in the United States for the above transportation . . . . . $'000 _____

INSTRUCTIONS

The EEC includes the following countries: Belgium-Luxembourg, Denmark (including Greenland), France, Greece, Ireland, Italy, the Netherlands and West Germany.

Other OECD includes the following countries: Australia, Austria, Finland, Iceland, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland and Turkey.

Item A–2 Payments for charters (bare boat, voyage or time) of vessels used by your company to import crude petroleum oils and gasoline should be included in this section.

Item A–3 Please include and specify payments made to an affiliate company in respect of vessel procured by them for use by your company.

Item B–6 is intended to cover the charter payments for vessels chartered from non-residents for purposes other than the importation of crude petroleum, petroleum oils and gasoline (covered in question A1, A–2 and A–3), such as other import traffic, export, domestic and coastal traffic, including the movement of Canadian oil and oil products between western and eastern Canada. Please specify the nature of the operation covered by data provided for this question.

Any comments or qualifications which you feel might be usefully added to this material would be appreciated:

Date	Telephone Telex	Name and title of responsible officer	Signature